**Before the**
**FEDERAL COMMUNICATIONS COMMISSION**
**Washington, DC 20554**



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| In the Matter of | ) | |
| | ) | |
| Forward-Looking Mechanism | ) | CC Docket No. 97-160 |
| for High Cost Support for | ) | |
| Non-Rural LECs | ) | |
| | ) | |

**Reply Comments of the**
**Rural Utilities Service**
**on Outside Plant Structure**

The Rural Utilities Service (RUS) appreciates the opportunity to offer reply comments to the Commission on the issue of outside plant structure in proxy models for non–rural LECs.

Although the rural areas served by non-rural LECs are less rural than the areas served by rural LECs, there are lessons to be learned from the experience of rural LECs. Further, some rural areas of non-rural LECs are as rural as areas served by rural LECs. The RUS has almost fifty years of experience with every aspect of rural telecommunications. As a rural development agency, our focus is on ensuring that all rural, high cost customers receive service that is comparable in quality and affordability to that available in urban and suburban areas regardless of the size of the provider.

The comments that follow are divided into two sections. The first section deals specifically with issues raised in the Further Notice of Proposed Rulemaking. The second section is more general and includes analysis of model error and the development process as we see it at this time.

## Specific Comments

Paragraph 50 - Customer Base

Paragraph 50 discusses how the models calculate the customer base. The Hatfield Model serves only households with telephone service. The BCPM serves all habitable establishments. The RUS believes the latter method is preferable for two reasons. First, the goal of the Telecommunications Act is to increase, rather than maintain, current subscribership levels. Second, an eligible carrier must be prepared to serve any customer, not just existing customers.

Paragraph 55-57, 64 - Platform Design

With regard to the mix of aerial, buried, and underground plant, the RUS concurs with the Commission's finding that plant mix should be based on terrain. Fixed percentages based on population density simply don't capture rural reality. For example, the decision of what type of plant to build in the most rural areas such as the lowest density zone of the Hatfield Model (0-5/square mile) would normally be based entirely on terrain. As stated in previous comments, buried plant is overwhelmingly favored. Even in those cases where aerial plant is required, it is often just a short insert. As alluded to in the notice, total lifetime cost favors buried plant in most cases.

Paragraph 73 - Hatfield 4 Drop Length

The Hatfield model assigns drop length generally in an inverse relationship to the population density. The RUS believes that if a fixed estimate is to be used, the lowest density zone drop length should be between three and five hundred feet, not 150 feet.

Paragraph 67 - Structure Sharing

The RUS has commented extensively and repeatedly on the issue of structure sharing. In brief, it is the RUS' experience that structure sharing is almost non-existent in rural areas. The Hatfield proponents defend their assumption of extensive sharing based on construction practices in new developments. This is a fundamental error. Both the Hatfield and BCPM models are attempting to model the costs which a facilities-based competitor would see if it built a telephone system that serves existing and future households. The sharing that occurs in new construction can not be assumed in this situation. Companies build and rebuild when they need to and when they have adequate access to capital. The build times for various utilities rarely coincide.

## General Comments

Over-optimization

The RUS is concerned that the focus on cost minimization is driving the models in a way which will inherently and consistently understate the cost of rural service. The models design a hypothetical system of precisely optimized plant, plant that is exactly right to serve a defined set of customers. The only replication of existing choices is that the design is calculated from existing wire centers (scorched node). Such a design does not comport with best practices. It is, in essence, a system built instantaneously from data which is assumed to be perfect.

In the real world, plant is built over time in conditions of uncertainty and with the knowledge that humans inevitably make mistakes. No competent designer facing an uncertain future and working with incomplete or imperfect data would precisely optimize plant based on that data. It can be argued that the models have built in spare capacity (fill factors[1]) but spare capacity cannot provide service where no plant is built because the data was wrong. Precisely optimized plant would require that an "efficient" provider have perfect knowledge, including knowledge of the future, and make no mistakes in execution.

Designers also focus on system flexibility. Lowest cost solutions, even on a long term basis, are not necessarily the choice of competent designers. In the plant design put forward by FCC staff, for example, copper based T1 subscriber carrier is applied below a breakpoint while fiber-based carrier is used above the breakpoint. This may appear an "efficient" use of resources, but most designers will accept a cost penalty to avoid built-in bottlenecks to system expansion. Copper does not migrate gracefully to fiber, it must be replaced.

More important, no one is installing new copper T1 systems in rural America today except, in a few cases, on existing plant. Traditional T1 copper based subscriber-carrier is not a modern technology. As far as it is practical, plant should be capable of evolution without wholesale rebuilding. If not, the design will become a de facto standard which retards system evolution.

Another factor that leads the models to inherently understate cost is that they are designed as if the entire nation were served by one system. None of the models consider market-share, i.e., the cost-shifting and continuing fixed costs resulting from two or more facilities-based competitors serving the same market.

Verification

Perhaps the most troubling aspect of the current state of the process is the inability of anyone to verify the models. It has taken nearly two years of intensive effort for the two industry-developed computer models to reach a point where the crucial aspects of customer location and outside plant design are beginning to *sound* plausible although this cannot be confirmed since the Hatfield Model 5 has not been released and the BCPM2 was released so recently that there has been no time for review. The Commission-developed model has never been released in any form. As of this date, less than 90 days from the adoption date set by the Commission, it has not yet been possible to verify the models through extensive public scrutiny.

When the Commission set the deadline, it was not generally recognized how difficult the task of modeling rural areas would prove. Based on talks given by the model developers, it seems that the current BCPM and Hatfield Models have begun to make strides. Even so, some of the preliminary information seems counter-intuitive and, at this time, we have no confidence that any of the models are ready for the important task of determining universal service support.

1. In low density areas, spare capacity is largely a function of the fact that cable comes in fixed sizes, i.e., 3, 6, 12, 25, 50, etc.

Once a choice is made, the incentive for further development will lessen and it can be expected that improvements will slow or stop. It would be a grave error to choose prematurely simply to meet a deadline. The RUS recommends that the Commission consider postponing the choice of a model to allow time for necessary model improvements, careful public scrutiny, and verification. If a model is going to be used, it is crucial to the future of rural America that it be a model *that works.*

## Conclusion

Models which have not been verified to provide accurate cost estimates for rural areas are not ready for the important task of determining universal service support. The emphasis on optimization of current models should be balanced by margins for uncertainty, error, and market share, because even an efficient provider cannot be expected to have perfect foresight, perfect knowledge, and perfect execution.

The RUS appreciates the opportunity to comment.

Dated: 10/3/97

Administrator
Rural Utilities Service